**Table D-1.** Regulated Units, Solid Waste Management Units, and Corrective Measure Systems

| Unit Addressed by Post-Closure Permit | Type of Unit | Corrective Measure (CM) System |
|---|---|---|
| Former disposal surface impoundment 1 | Regulated unit | **Closed Surface Impoundment (SI)** In-Situ Air Sparging with or without enhanced bioremediation |
| Former disposal surface impoundment 2 | Regulated unit | |
| Former disposal surface impoundment 3 | Regulated unit | |
| Oily water sewer system | Solid waste management unit | **A-Aquifer (AUA)** In-situ Air Sparging with or without Soil Vapor Extraction and with or without Groundwater Extraction and Injection |
| | | **B-Aquifer (BUA)** Groundwater Extraction and Injection with or without enhanced bioremediation |
| | | **Upper Confined Aquifer (UCA)** Monitored Natural Attenuation |
| Tank 40 Spill Area | Area of concern | ** |
| Tank 04A Spill Area | Area of concern | ** |
| Pipeline Valve Control Box | Solid waste management unit | ** |

**Corrective measures will be determined in the future.

**Table D-2.** Contaminants of Potential Concern (COPCs)

| | | | |
|---|---|---|---|
| **VOCs** | 1,1,1-Trichloroethane | **SVOCs** | 1,4-Dioxane |
| | 1,1,2-Trichloroethane | | 2,4-Dimethylphenol |
| | 1,1-Dichloroethane | | 2,4-Dinitrophenol |
| | 1,2-Dibromoethane | | 2-Methylnaphthalene |
| | 1,2-Dichlorobenzene | | 2-Methylphenol (o-Cresol) |
| | 1,2-Dichloroethane | | 3-Methylphenol (m-Cresol) |
| | 1,3-Dichlorobenzene | | 4-Methylphenol (p-Cresol) |
| | 1,4-Dichlorobenzene | | 4-Nitrophenol (p-Nitrophenol) |
| | 2-Butanone (Methyl ethyl ketone) | | Acenaphthene |
| | 2-Hexanone | | Anthracene |
| | Acetone | | Benzo(a)anthracene |
| | Benzene | | Benzo(a)pyrene |
| | Carbon disulfide | | Benzo(b)fluoranthene |
| | Carbon tetrachloride | | Benzo(k)fluoranthene |
| | Chlorobenzene | | Bis(2-ethylhexyl) phthalate |
| | Chloroform (Trichloromethane) | | Butyl benzyl phthalate |
| | Chloromethane | | Chrysene |
| | Ethylbenzene | | Dibenzo(a,h)anthracene |
| | Methyl isobutyl ketone | | Dibenzofuran |
| | Styrene | | Diethyl phthalate (Diethyl ester) |
| | Tetrachloroethene | | Dimethyl phthalate (Dimethyl ester) |
| | Toluene | | Di-n-butyl phthalate |
| | Trichloroethene | | Di-n-octyl phthalate |
| | Vinyl chloride (Chloroethene) | | Fluoranthene |
| | Xylenes, total | | Fluorene |
| | | | Indeno(1,2,3-cd)pyrene |
| **Inorganics** | Arsenic | | Naphthalene |
| | Lead | | N-Nitroso-di-n-propylamine |
| | Cyanides | | Phenanthrene |
| | Sulfides | | Phenol |
| | | | Pyrene |
| **Total** | Gasoline-range organics | | Pyridine |
| **Hydrocarbons** | Diesel-range organics | | |
| | | | |

**Table D-3.** Contaminants of Concern (COCs) and Target Groundwater Protection Standards (TGPSs)

| **Contaminant of Concern** | **Target Groundwater Protection Standard** *(μg/L)* |
|---|---|
| Benzene | 4.6 |
| Toluene | 1,100 |
| Ethylbenzene | 15 |
| Xylenes (total) | 190 |
| Naphthalene | 1.7 |
| Trichloroethene (TCE) | 2.8 |
| Vinyl chloride | 0.19 |
| Diesel-range organics (DRO) by Alaska Method AK102 | 1,500 |
| Gasoline-range organics (GRO) by Alaska Method AK101 | 2,200 |

**Table D-4**. Indicator Parameters (IPs)

| Corrective Measure | Indicator Parameter |
|---|---|
| SI | Benzene, TCE |
| A Aquifer | Benzene |
| B Aquifer | Benzene |
| UCA | Benzene |

**Table D-5.** Natural Attenuation (NA) Monitoring Parameters

| **UCA Parameters** |
|---|
| Iron II |
| Dissolved Manganese |
| Sulfate |
| Methane |

**Table D-6.** Operation Plan for Groundwater Corrective Measures (CMs)

| CM | Available Operating Locations[1] | Minimum Pumping Rate for CM System[1] |
|---|---|---|
| **SI** | | |
| Northern air sparge system | SAS-1 through SAS-22 | 35 cfm |
| Southern air sparge system | SAS-23, SAS-24, SAS-25 | 0 cfm |
| **A Aquifer** | PM (Merged Aquifer) | |
| Groundwater extraction[2] | R-19, R-20, R-21R, R-22, R-23, R-24, R-25, R-26, R-27, R-28, R-33, R-34, RE-36<br>PRM (A Aquifer)<br>R-40, R-41, R-44, R-45, R-46, R-47, R-48, R-49 | 60 gpm |
| Groundwater re-injection | PM (Merged Aquifer)<br>Trench, IR-29 through IR-32, or wastewater treatment system<br>PRM (A Aquifer)<br>I-1, I-2, I-3, I-4, I-5 | 60 gpm |
| Air sparging | AS wells | 60 cfm |
| **B Aquifer** | | |
| Groundwater extraction | R-50, R-51, R-52, R-54, R-55, R-56 | 60 gpm |
| Groundwater re-injection | I-6 through I-9 | 30 gpm |
| **UCA** | TW-2A | Normal industrial production rates |

[1] Operating locations and rates will be based on analytical results, well performance, and capacity. Operating locations may be added.
[2] Pumping rate will be reduced or eliminated as the PRM air sparging system is proven effective as discussed in Section D-4.2.

Monitoring frequency subject to Permit condition IV.C.2*** Downgradient compliance well
COCs Contaminants of concern (Permit Table 2)
COPCs Contaminants of potential concern (Permit Table 8)
IP Indicator parameter (Permit Table 3)
NA Natural attenuation monitoring parameters (Permit Attachment D, Table D-5) if analytes exceed TGPS

**Table D-7.** Corrective Action and Compliance Monitoring Programs - Groundwater Gauging

| SI | A-Aquifer | | | | B Aquifer | | UCA |
|---|---|---|---|---|---|---|---|
| SMW-4 | E-002 | E-080[C] | E-171 | PMZ-5 | E-101B | E-233 | E-109[C] |
| SMW-5 | E-003 | E-081 | E-172 | P-40 | E-121B | E-234B | E-110 |
| SMW-6 | E-004 | E-083 | E-173 | P-40/41 | E-129 | E-235B | E-125 |
| SMW-7 | E-005 | E-086 | E-175 | P-41 | E-137B | E-245B | E-126 |
| SMW-9 | E-007 | E-088 | E-176 | P-44 | E-146 | E-249A | E-127 |
| SMW-10 | E-008 | E-089 | E-181 | P-45 | E-149 | E-249B | E-145 |
| SMW-11 | E-010 | E-090 | E-185 | P-46 | E-155 | E-249C | E-147 |
| SMW-12A[C] | E-012 | E-091[C] | E-186 | P-47 | E-156 | E-250A | E-148 |
| SMW-13 | E-014[C] | E-092 | E-187A | P-48 | E-158 | E-251A | E-153 |
| SMW-21A[C] | E-015 | E-094 | E-189 | P-49 | E-159 | E-251B | E-154 |
| SMW-22A | E-016 | E-095 | E-190A | PI-1 | E-160[C] | E-252A | E-157 |
| SMW-23 | E-017R | E-097 | E-203 | PI-2 | E-162 | E-252B | E-161 |
| SMW-24 | E-019 | E-099 | E-208 | PI-3 | E-163 | E-253 | E-194 |
| SMW-27 | E-021 | E-100 | E-210 | PI-4 | E-167 | E-254 | E-198 |
| SMW-30 | E-022 | E-102 | E-211 | PI-5 | E-169 | O-5 | E-199 |
| SMW-31 | E-025 | E-103B | E-212A | R-39 | E-170 | P-50 | E-200 |
| SMW-32 | E-027 | E-104 | E-213 | R-42 | E-177B | R-51 | E-201 |
| SMW-33 | E-028 | E-105 | E-226 | T-114 | E-178 | PI-6A | SMW-16 |
| SMW-34 | E-030A[C] | E-106 | E-227 | | E-179 | PI-7 | TW-3 |
| SMW-I-1 | E-032 | E-107 | E-228 | | E-182 | PI-8 | |
| SMW-I-2 | E-034 | E-111 | E-231 | | E-183 | PI-9 | |
| SD-1 | E-037 | E-114 | E-232A | | E-187B | | |
| SD-3 | E-038[C] | E-116 | E-234A | | E-190B | | |
| SPZ-1 | E-040 | E-117 | E-235A | | E-191 | | |
| SPZ-3 | E-043 | E-118 | E-236 | | E-192 | | |
| | E-047 | E-119 | E-245A | | E-193 | | |
| | E-054 | E-121A | E-246A | | E-195 | | |
| | E-055 | E-122 | E-247A | | E-196 | | |
| | E-056 | E-123 | E-247B | | E-197 | | |
| | E-057 | E-128 | E-248A | | E-202A | | |
| | E-058 | E-132 | E-248B | | E-205 | | |
| | E-059 | E-137A | ER-37 | | E-206 | | |
| | E-062 | E-138 | MW-12 | | E-207 | | |
| | E-064 | E-139 | MW-22 | | E-209 | | |
| | E-066 | E-140 | MW-32 | | E-215[C] | | |
| | E-069 | E-141 | MW-42 | | E-216 | | |
| | E-071 | E-142 | MW-52 | | E-217B | | |
| | E-072RR | E-144 | MW-92 | | E-218A and B | | |
| | E-073 | E-150 | MW-93 | | E-219 | | |
| | E-074 | E-151 | PMZ-1 | | E-220 | | |
| | E-076 | E-152 | PMZ-2 | | E-224 | | |
| | E-077 | E-165 | PMZ-3 | | E-225 | | |
| | E-078 | E-168 | PMZ-4 | | E-232B | | |

Industrial pumping rates and recovery well pumping rates will be recorded at the time of gauging.

Monitoring frequency subject to Permit condition IV.C.2*** Downgradient compliance well

COCs Contaminants of concern (Permit Table 2)
COPCs Contaminants of potential concern (Permit Table 8)
IP Indicator parameter (Permit Table 3)
NA Natural attenuation monitoring parameters (Permit Attachment D, Table D-5) if analytes exceed TGPS

[C] Well required for gauging during both corrective action and compliance monitoring programs. All other wells are required for corrective action gauging only. Wells listed on this table are to be gauged in the spring and fall quarters for the duration of the monitoring program.

**Permit Table D-8.** Corrective Action and Compliance Monitoring Programs - Groundwater Sampling

| Well No. | Corrective Action Monitoring | | Compliance Monitoring | |
|---|---|---|---|---|
| | *Feb-Mar-Apr* Spring | *Aug-Sep-Oct* Fall | *Feb-Mar-Apr* Spring | *Aug-Sep-Oct* Fall |
| **SI Area** | | | | |
| SD-3 | COCs | COCs | | |
| SMW-I-1 | COPCs | COCs | COCs | COCs |
| SMW-5 | IP | IP | | |
| ***SMW-9 | COCs | COCs | | |
| SMW-10 | IP | IP | | |
| SMW-12B | COCs | COCs | COCs | COCs |
| SMW-21A | COCs | COCs | | |
| SMW-24 | IP | IP | | |
| ***SMW-29 | COCs | COCs | | |
| SMW-31 | IP | IP | | |
| SMW-32 | IP | IP | | |
| SMW-33 | IP | IP | | |
| SMW-34 | COCs | COCs | | |
| **A-Aquifer (PM Area)** | | | | |
| E-004 | COCs | COCs | | |
| E-014 | COCs | COCs | COCs | COCs |
| E-030A | COCs | COCs | COCs | COCs |
| E-038 | COPCs | COCs | COCs | COCs |
| E-055 | COPCs | COCs | | |
| E-059 | IP | IP | | |
| E-065R | IP | IP | | |
| E-072RR | IP | IP | | |
| E-089 | IP | IP | | |
| E-094 | IP | IP | | |
| E-122 | IP | IP | | |
| E-162 | IP | IP | | |
| E-208 | IP | IP | | |
| E-229 | IP | IP | | |
| E-231 | IP | IP | | |
| MW-12 | IP | IP | | |
| MW-92 | IP | IP | | |
| MW-93A | IP | IP | | |
| **A-Aquifer (PRM Area)** | | | | |
| E-080 | COCs | COCs | COCs | COCs |
| E-091 | COCs | COCs | COCs | COCs |
| E-105 | IP | IP | | |
| E-118 | COCs | COCs | | |

Monitoring frequency subject to Permit condition IV.C.2*** Downgradient compliance well

COCs Contaminants of concern (Permit Table 2)
COPCs Contaminants of potential concern (Permit Table 8)
IP Indicator parameter (Permit Table 3)
NA Natural attenuation monitoring parameters (Permit Attachment D, Table D-5) if analytes exceed TGPS

| Well No. | Corrective Action Monitoring | | Compliance Monitoring | |
|---|---|---|---|---|
| | *Feb-Mar-Apr* Spring | *Aug-Sep-Oct* Fall | *Feb-Mar-Apr* Spring | *Aug-Sep-Oct* Fall |

**Permit Table D-8 (cont'd)**. Corrective Action and Compliance Monitoring Programs - Groundwater Sampling

| Well No. | Corrective Action Monitoring | | Compliance Monitoring | |
|---|---|---|---|---|
| | *Feb-Mar-Apr* Spring | *Aug-Sep-Oct* Fall | *Feb-Mar-Apr* Spring | *Aug-Sep-Oct* Fall |
| **A-Aquifer (PRM Area-cont'd)** | | | | |
| E-132 | IP | IP | | |
| E-141 | IP | IP | | |
| E-144 | IP | IP | | |
| E-150 | COCs | COCs | | |
| E-151 | IP | IP | | |
| E-190A | IP | IP | | |
| E-152 | IP | IP | | |
| ***E-168 | COCs | COCs | | |
| E-171 | COCs | COCs | | |
| E-203 | IP | IP | | |
| E-244 | IP | IP | | |
| **B-Aquifer** | | | | |
| E-146 | COPCs | COCs | COCs | COCs |
| E-251B | IP | IP | | |
| E-160 | COCs | COCs | COCs | COCs |
| ***E-163 | COCs | COCs | COCs | COCs |
| E-177B | COCs | COCs | | |
| E-179 | IP | IP | | |
| E-187B | IP | IP | | |
| ***E-196R | COCs | COCs | | |
| E-197 | IP | IP | | |
| E-206 | IP | IP | | |
| E-207 | IP | IP | | |
| E-209 | IP | IP | | |
| E-215 | COCs | COCs | COCs | COCs |
| E-216 | IP | IP | | |
| E-217B | IP | IP | | |
| E-224 | IP | IP | | |
| E-233 | IP | IP | | |
| E-234B | IP | IP | | |
| E-245B | IP | IP | | |
| **UCA** | | | | |
| E-109 | COPCs, NA | COCs, NA | COCs | COCs |
| E-110 | IP | IP | | |
| E-125 | IP, NA | IP, NA | | |
| E-127 | COCs, NA | COCs, NA | | |
| E-145 | IP | IP | | |

Monitoring frequency subject to Permit condition IV.C.2

*** Downgradient compliance well
COCs Contaminants of concern (Permit Table 2)
COPCs Contaminants of potential concern (Permit Table 8)
IP Indicator parameter (Permit Table 3)
NA Natural attenuation monitoring parameters (Permit Attachment D, Table D-5) if analytes exceed TGPS

| Well No. | Corrective Action Monitoring | | Compliance Monitoring | |
|---|---|---|---|---|
| | *Feb-Mar-Apr* Spring | *Aug-Sep-Oct* Fall | *Feb-Mar-Apr* Spring | *Aug-Sep-Oct* Fall |
| ***E-147 | COCs | COCs | | |

**Permit Table D-8 (cont'd)**. Corrective Action and Compliance Monitoring Programs - Groundwater Sampling

| Well No. | Corrective Action Monitoring | | Compliance Monitoring | |
|---|---|---|---|---|
| | *Feb-Mar-Apr* Spring | *Aug-Sep-Oct* Fall | *Feb-Mar-Apr* Spring | *Aug-Sep-Oct* Fall |
| **UCA (cont'd)** | | | | |
| E-148 | IP | IP | | |
| E-153 | IP, NA | IP, NA | | |
| E-198 | COCs | COCs | | |
| E-199 | IP | IP | | |
| T-2B | IP | IP | | |

Monitoring frequency subject to Permit condition IV.C.2
*** Downgradient compliance well
COCs Contaminants of concern (Permit Table 2)
COPCs Contaminants of potential concern (Permit Table 8)
IP Indicator parameter (Permit Table 3)
NA Natural attenuation monitoring parameters (Permit Attachment D, Table D-5) if analytes exceed TGPS

**Table D-9.** Corrective Action and Compliance Monitoring Programs – SVE System Monitoring

| System | Vadose Zone Monitoring Wells | Effectiveness Criteria |
|---|---|---|
| PRM AS/SVE System | PSVE-1, PSVE-2, PSVE-3, PSVE-4, PSVE-5, E-142, E-143, E-150, E-186, E-189, E-211, E-237 | Measured vacuum present at wells screened in vadose zone within air sparge footprint |
| Highway AS/SVE System | HSVE-1, HSVE-2, HSVE-3, HSVE-4, HSVE-5, HSVE-6, HVMP-1, HVMP-2, HVMP-5, HVMP-6, E-021 | Measured vacuum present at wells screened in vadose zone within air sparge footprint |
| Lower Tank Farm AS/SVE System | TBD | Measured vacuum present at wells screened in vadose zone within air sparge footprint |

If a well has a screen submerged below the water table for a given event, then it will not be measured for vacuum.
Air sparge footprint determined on one-time basis with air pressure measurements taken when SVE system is not in operation. The footprint can be re-evaluated with replication of the measurements.
TBD to be determined

**Table D-10.** Corrective Action Treatment Records

| Corrective Measure (CM) System | Treatment Monitoring |
|---|---|
| Groundwater Extraction | Recovery well pumping rate for each pumping well and total volume, recorded weekly |
| Groundwater Injection | Injection rate for each injection point, recorded weekly |
| In-Situ Air Sparging | Air flow and pressure at each operating well, recorded weekly |
| Soil Vapor Extraction | Air flow and vacuum at each operating SVE well, recorded monthly |
| Monitored Natural Attenuation | Natural attenuation analyses, performed semi-annually on samples collected from wells exceeding TGPS and from one or more background wells |
| UCA Industrial Pumping | Industrial pumping rate for each pumping well and total volume, recorded weekly |